# EPO: University of California, Los Angeles

These are the Education and Public Outreach activities for the University of California, Los Angeles.

## Chicago 2004

Barbara Laval and Maria Rivera participated at the NASA Office of Space Science, Chicago 2004 conference "A Workshop to Foster Broader Participation in NASA Space Science Missions and Research Programs."

The conference goals were to reach out to minority scientists and share information on NASA's future space science missions and research programs, to include individuals from underrepresented colleges and universities and forge collaborations and build foundations of personal contacts, and broaden participation and establish common understanding and language.

The conference provided poster sessions, group discussions, and a tour to the Adler Planetarium.

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## NASA Tribal College and University Conference

Barbara Angel Spirit Wings Laval attended and participated in the NASA–Tribal College and University Conference – May 19–21, 2004, Pasadena, California, at the request of NAI Central's Karen Bradford and Krisstina Wilmoth. Ms. Laval presented the NASA Astrobiology Institute's Minority Insitution Research Sabbatical program, during session I – The NASA Opportunities for Research and Education.

Ms. laval also attended a closed session of the President's Roundtable. During this session ideas and needs were discussed and recommendations given to begin collaborations and extend participation with NASA missions and research programs.

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## Astrobiology Summer Science Experience for Teachers (ASSET)

Barbara Laval, UCLA's EPO Director, participated in the ASSET 2004 inaugural program. The program was interactive and content rich with presentations by leading astrobiology scientists. The scientists included Dr. Jill Tarter and Rocco Mancinelli from the SETI Institue, Dr. Nina Jablonski, California Academy of Sciences. Participants received hand–on experience with the Voyages Through Time curriculum. Field trips included the California

Academy of Science, Salts Flats, Wilcox High School and SETI Institute.

Participants attended scientific talks that addressed stellar evolution, formation of planetary systems and habitability, mechanisms of evolution, and SETI. Participants helped plan ASSET outreach activities, and polished leadership and presentation skills for conducting successful teacher workshops at their insitutions.

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## Palms Middle School Visit to UCLA

The Palms Middle School's four science classes held a science contest and the winners were rewarded with a visit to the NASA UCLA Center for Astrobiology in the Institute of Geophysics and Planetarey Physics.

Seventh grade Student Rodrigo Simas, president of the seventh grade leadership club at Palms Middle school, organized the visit with support from teacher Mr. Clairs. There were approximately 35 students who visited the center.

Upon arrival to UCLA, the students were given an hour−long private Planetarium show hosted by UCLA's Astronomy graduate student Ms. Karen Peterson. The students spent approximately one hour and fifteen minutes each with Dr. Abby Kavner, minerologist, Dr. Mark Webster, paleontologist, and Dr. Sorel Fitz−Gibbon, geneticist. Topping off the day, the students participated in a video conference with Dr. Bruce Runnegar, Director of the NASA Astrobiology Institute, Dr. David Morrison, NAI Lead scientist, and Ms. Estelle Dodson, Information Technologist. The students and Mr. Clairs were able to ask science and technology questions.

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## South Gate Middle School Visit

Barbara Llaval and Dr. Maria Rivera visited the South Gate Middle school in South Gate, California. Ms. Laval gave a general overview of Astrobiology and Dr. Rivera answered class questions pertaining to genomics. Ms. Buck, their science teacher, prepared the class by teaching the students basic genomic vocabulary.

Below are questions from the students in Ms. Bucks classes: GENETICS −

1. What would happen to a child if it doesn't get enough chromosomes from their parents will it be deformed or mentally ill? 2. How do genes pass from one generation to another? 3. Why is genetics so important? 4. Can genes die? What harm can happpen to DNA? 5. Do we get more traits from our fathers or mothers? 6. How come sometimes we don't inherit any traits? 7. What specific things do you have to look for to trace DNA? 8. Do aliens have DNA? 9. What are some traits that identify your heredity? 10. Can we be part Spanish since Spain conquered Mexico? 11. What are some traits to prove that we are part Spanish? Hair? Eyes? Skin? 12. Are the traits as same as the genes? 13. How do genes pass from one generation to another, do they change structure and traits?

CLONING 1. Is it possible in the future to successfully clone a human? 2. Who discovered the cloning process? 3. Was it by the cloning process that one celled organisms started? 4. If you could clone the entire jurassic age would you or would you not? 5. Could we clone a fossilized organism from another planet? 6. Is it possible to clone a fossilized, pre−historic animal and bring it back to life?

PERSONAL 1. Why did you get interested in genetics? 2. What brought you to the point that you wanted to learn genetics? 3. How often do you study for tests and how do you study? 4. What made you decide to study genetics? 5. Is it fun to study genetics? 6. How many years did it take? 7. Why are you interested in astrobiology? 8. What jobs can you get if you study Astrobiology? 9. What do you study in Astrobiology? DO you have to use a lot of Math? 10. Do you like the job/carreer and is it fun? 11. How long have you been studying this? How long does it take to get the position you have? 12. What do you plan on discovering?

ASTROBIOLOGY 1. What's going on on Mars? 2. What does the latest data mean? 3. What is astrobiology? 4. Do you know anything about the new planet Zetna? 5. Does space ever end? 6. Do aliens have DNA? 7. How can you study life so far away?

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## South Gate Middle School Visit (2)

Since the first visit to South Gate was a success, Ms. Buck asked if we would visit the class again. The topic for the second visit was Mars. Barbara Laval (UCLA) and Sheri Klug (Arizona State University) visited the class.

Mrs. Klug's job at Jet Propulsion Laboratory was manning the night shift of the MER mission's meridiani landing site. She discussed various aspects of Mars and Earth and answered sutdents' questions. She brought teacher packets for the teachers with materials and stickers for the students.

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## Society for the Advancement of Chicanos and Native Americans in Science (SACNAS)

Barbara Laval (UCLA) and Karen Bradford (NAI) attended and participated at the 2003 SACNAS conference – 30 Years at the Crossroads: Merging Disciplines & Advancing Diversity, Albuquerque, New Mexico.

The SACNAS National Conference is a professional scientific meeting that interweaves opportunities to share research, receive guidance, and develop professionally. Innovative conference activities consist of presentations of exemplary science research by top national scientists. The three−day meeting also included formal and informal mentoring sessions, inquiry−based training workshops for pre−college educators and cultural activities such as a Pow Wow.

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## NAI's Minority Institution Research Sabbatical – UCLA Presentations – Atlanta, Georgia

Barbara Laval (UCLA) and Karen Bradford(NAI) visited Atlanta University Center to present NAI Education and Public Outreach activities, and the Minority Institution Research Sabbatical (MIRS) program.

NAI MIRS Presentation/Discussion, NAI overview and MIRS Program and research with the NAI – Morehouse University. Mrs. Karen Bradford.

NAI MIRS Student Presentation, student research and activities as a result of the NAI MIRS program – La Tasha Taylor, Tennessee State University (TSU).

Attended Spelman College Science Day Activities.

Attended NAI Senior Scientist David Morrison's presentation and planetarium show – Fernbank Science Center.

NAI UCLA EPO Presentation – Atlanta University Center – Presentations and activities for grades 9 – 12, Barbara Laval (UCLA), Karen Bradford (NAI) and Todd Gary (TSU).

Sheri Klug from Arizona State University provided the Community Nights kit in support of our presentation.

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### Sally Ride Science Festival

Barbara Laval, Manager of the UCLA Center for Astrobiology, attended and participated at the UCLA Sally Ride Science Festival. Dr. Sally Ride, the first American woman astronaut to travel in space, invited 5th – 8th grade girls and interested adults to attend the festival at UCLA presented by the Sally Ride Science Club.

Sally Ride Science Club aims to make science, math, and technology accessible and fun for girls with natural curiosity. The Club works in collaboration with universities and colleges, girls and women's organizations, schools, and science and technology businesses.

There were two Discovery workshops and a Street Fair.

The NAI UCLA team invited the NAI Virtual Planetary Laboratory team to participate in this one day event.

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### The National Space Biomedical Research Institute – EPO Peer Review

UCLA's EPO Director, Barbara Laval, was invited to be a participant on an EPO Peer Review panel for the National Space Biomedical Research Institute (NSBRI). The NSBRI has recently released a Request for Proposals (RFP) to continue these Education and Public Outreach programs. The NSBRI is a NASA–funded entity comprised of 12 consortium member institutions, with Baylor College of Medicine serving as the lead institution. Its mission is to develop effective countermeasures to the deleterious effects on the human body of long–duration exposure to the lack of gravity in the space environment.

The Institute funds a portfolio of approximately 100 projects. This RFP includes calls for two different types of proposals, including K–16 curriculum and professional development programs, and a Space Life Sciences Graduate Program.

This E/PO panel took place on Thursday and Friday, August 26th and 27th in Houston, Texas.

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## Littleton High School Physics Class Project, Littleton, New Hampshire

Barbara Laval and Dr. Jonathan Aurnou participated in a videoconference with Mr. Bill Church's Littleton High School Physics Class on December 9, 2003.

Littleton High School Participants: Students: Ryan Haley, Joe Lahout, Eric Chase, Josh Ashey, Scott Letson, Phuong Thai, Zach Sar, Jon Hogan, Ian Nadeau, Joe Lis.

Staff and Faculty: mentor Arlene Soule, distance learning coordinator Regan Pride, and physics teacher William Church.

Summary: During the the 2002–2003 school year, Mr. William Church of Littleton High School received a grant from the Lemelson–MIT program to design a sidewalk heating system powered by alternative energy as part of his physics class. Such a project is of great practical interest in northern New Hampshire, where Littleton High is located. By the end of the school year Mr. Church and his class had designed working prototype of a system that utilized waste heat from the chimney the school's primary heat source. This past year their design was incorporated into the renovation of the high school's sidewalk.

During the 2003–2004 school year, a new group of students worked on devising experiments to measure the performance of the system. It was in the middle of designing these experiments that a videoconference was set up between the Littleton High School students and Professor Jonathan Aurnou (Earth & Space Sciences, UCLA). This video conference was carried out using the NASA Astrobiology Institute facilities at UCLA and allowed the students to access Prof. Aurnou's experience in planetary heat transfer processes. Dr. Aurnou and the students discussed thermal measurements in general, measurements specific to the sidewalk heating system, and how best to look for and interpret patterns in large data sets. Specifically, they benefited from the videoconference because they faced a question they had not considered before: "what is the proper data collection rate for the critical quantities that were being measured?" After the videoconference, the students worked to answer this question and as a result designed stronger experiments. In addition, the students enjoyed and benefited from talking with a professional scientist who utilizes the concepts they were currently learning in Mr. Church's physics class.

Future Videoconferences: During the 2004–2005 school year, yet another group of students will work on further improving the experiments the previous year's students created and in optimizing the sidewalk heating system. They will work to understand what was learned about the performance of the

sidewalk system from the previous year. Finally, they will conduct their own experiments and work to improve the system so that it is working at an optimal efficiency. Prof. Aurnou and Mr. Church plan to carry out another videoconference for this new group of budding young scientists.

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## NASA–National Association for the Advancement of Colored People (NAACP) Afro–Academic Cultural, Technological, and Scientific Olympics (ACT–SO) Science Competition

NASA Headquarters invited Barbara Laval to attend and participate as a NASA Judge for the 2004 NAACP ACT–SO Competion, held in Philadelphia, PA, July 7–10, 2004.

The Afro–Academic Cultural, Technological, and Scientific Olympics (ACT–SO) ia a major youth initiative of the NAACP.

ACT–SO is a learning experience and an opportunity for youth to be mentored and coached by community leaders, scientists, artists, writers, and musicians. ACT–SO involves volunteers, coaches, mentors, and judges on the local and national levels. Each of these individuals serve as role models and play an important role in their personal and professional development.

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